

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 2-11				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-D-11-006			Contract Period 04/29/2011 To 03/31/2013 Base Option Period Number 1			Title of Work Assignment/SF Site Name Passive Sampling Methods				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW B					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 02/12/2013 To 03/31/2013				
Comments: This is a work assignment initiation. The contractor shall submit a work plan in accordance with the work Assignments clause. This work assignment includes hours anticipated to be utilized by the end of the Option I period (140 hours). To the best of our knowledge, this work does not unnecessarily duplicate any work previously performed or currently being performed.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE: 0				
04/29/2011 To 03/31/2013										
This Action:						140				
Total:						140				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:		LOE:				
Cumulative Approved:				Cost/Fee:		LOE:				
Work Assignment Manager Name Shaibal Mukerjee <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number 919-541-1865 FAX Number:				
Project Officer Name Karen C. Watson <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 919-541-3114 FAX Number:				
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: FAX Number:				
Contracting Official Name Rodney-Daryl Jones <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>						Branch/Mail Code: Phone Number: 919-541-3112 FAX Number:				

I. WORK ASSIGNMENT TITLE

Collaborative Evaluation/Validation of Low-Cost Volatile Organic Compound Passive Sampling Methods

II. Work Assignment Manager (WAM):

WAM Name: Shaibal Mukerjee

U.S. Environmental Protection Agency

National Exposure Research Laboratory

Human Exposure & Atmospheric Sciences Division

Environmental Characterization & Apportionment Branch (MD-E205-03)

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Alt. WAM Name:

III. PERIOD OF PERFORMANCE

Option 1 Period

IV. BACKGROUND

Traditional methods of air sampling for VOCs are often cumbersome, costly, and require a high level of technical expertise. Other limitations, e.g., access to electricity and temperature-controlled shelters, further complicate installing and operating stations for investigative air monitoring. A cost-effective, and reasonably accurate method to quantify VOCs and HAPs is needed to evaluate emissions, source impacts, and exposures.

Although researchers have utilized passive VOC air sampling for years, this technology has been used sparingly across EPA regions and labs due to the lack of a versatile and comprehensive method. New applications for deploying low-cost passive sorbent (PS) tubes are becoming increasingly appealing to determine “fenceline” concentrations of pollutants with the development of Draft EPA Method 325A “Facility Fenceline Monitoring, Passive Sampler Deployment Sample Collection and Data Evaluation” and Draft EPA Method 325B “Analysis of Sorbent Tubes Used to Determine Fenceline VOCs From Fugitive and Area Sources.”

Preliminary evaluation of the PS tubes suggested precision and accuracy issues under Work Assignment (WA 2-03), EPA Contract No. EP-D-11-006.

To further evaluate Draft Methods 325A and 325B, a Regional Method (RM) project in collaboration with a team of EPA regions, ORD, and OAQPS will deploy PS tubes (in duplicates) downwind of select VOC sources at fenceline locations around the country. Field sampling will take place for up to one year in each participating region, with up to a two week sample exposure collected during each observation. (PS tubes to be used will likely be tubes coated inside with ceramic and packed with Carbopack X sorbent from Sigma-Aldrich/Supelco.)

Prior to this, performance evaluation of the PS tubes will be conducted and a Category III (3) QAPP will be developed (Phase 1). It is anticipated that this QAPP will be modified for the monitoring phase (Phase 2) planned for four EPA regions.

The purpose of this work assignment (WA) is to:

1. Conduct round robin lab analysis of PS tubes for VOCs identified in the RM project based on blank and diluted calibration gas concentrations.
2. Develop a chain of custody plan for deployment and analysis of PS tubes by contractor labs during Phase 2.
3. Identify costs associated with the purchase of PS tubes and sampler hoods for the RM project.
4. Develop a Category III QAPP that will encompass the previous tasks for use in the Phase 2 monitoring effort.

V. TASKS

Task 1 Management and Workplan

The Contractor shall plan for technical conference calls on an as-needed basis to brief the WA COR and EPA team on progress or issues to complete each task. The contractor shall prepare a work plan describing the technical approach for each of the tasks in this work assignment. In addition the Contractor shall provide a cost and labor estimate for the total work assignment and the cost and labor required to complete each of the WA tasks. The Contractor shall provide monthly reports to the EPA WA COR as required by the contract deliverables and must contain a summary of technical progress and WA resource use (labor and cost) information as required by the contract.

Task 1 Deliverables:

1. Work Plan
2. Monthly Progress Reports

Task 2 Laboratory Survey

Contractor shall provide a letter report and table describing how many laboratories are able to perform the sorbent tube preparation and the sample analysis described in Draft Method 325B. Selection of labs should be based, in part, on precision/accuracy findings in letter report deliverable in WA 2-03, Contract No. EP-D-11-006. The report must contain but is not limited to:

- Legal Name and address of available laboratories,
- a description of the laboratory equipment used for this method,
- the analysis capacity in samples per day,

- the estimated detection limit (ng/tube) for each compounds.
- cost per sample for analysis of two VOC components, (Benzene and 1,3-Butadiene) and
- cost per tube for analysis of the following VOCs:
 - 1,3-Butadiene,
 - Benzene,
 - Toluene,
 - Ethylbenzene,
 - m-Xylene,
 - p-Xylene,
 - Styrene,
 - o-Xylene, and
 - Carbon Tetrachloride.

Task 2 deliverables:

The Contractor shall provide a letter report and table describing how many laboratories are able to perform the sorbent tube preparation and the sample analysis described in Draft Method 325B.

Task 3 Laboratory Round Robin

The Contractor shall provide round robin analysis support of approximately 57 passive sorbent (PS) tubes for the VOCs listed in Task 2 (see Table 1). The tube analysis will be done by up to 3 laboratories (if available) to assess the method performance of Draft Method 325B. Labs involved shall be based on the survey results in Task 2 and on round robin analyses performed as part of WA 2-03, EPA Contract No. EP-D-11-006.)

EPA will provide clean conditioned PS tubes for this Task. EPA will prepare PS tube blanks, low- and mid-level calibration gas concentrations, and ambient concentration tubes for Contractor shipment to commercial laboratories. EPA will provide PS tubes with low- and mid-level calibration gases for Benzene and 1,3-Butadiene and a separate low-/mid-calibration set for the 9 VOCs listed in Task 2. The Contractor shall be responsible for shipment and return of PS tubes.

The commercial laboratories should provide full laboratory narratives with raw data and excel summaries. Laboratory narratives should include standard operating procedures (SOPs), any comments, suggestions or request for clarification as these relate to Draft Method 325B. The Contractor shall provide a letter report with a summary of the lab results and delivery of all raw and electronically available data.

The round robin experimental matrix shall include 3 replicates of the sample type (see Table 1). EPA anticipates shipping two types of low calibration gas samples and lab blanks in shipment batch 1 for a total of 12 samples per laboratory, two types of mid calibration gas samples in batch 2 for a total of 6 samples per laboratory per shipment, and one batch and a field blank in batch 3 (4 samples per lab) as shown in Table 1. These sample types correspond to zero, low-calibration concentration, high-calibration concentration and ambient. Laboratories shall follow

Draft Method 325B and report any deviations that are customary or required for their laboratory to complete the analysis.

The contractor will summarize the results of the round robin tests in a letter report that shall include but not be limited to:

- A narrative that describes the experimental design and samples supplied for the round robin laboratory tests.
- Tables summarizing the laboratory results for all samples and:
 - The average value for replicate samples supplied to each laboratory.
 - The precision demonstrated by each laboratory as measured by the standard deviation of three analyses of each sample type,
 - The accuracy for low and mid level sample analyses as compared to the canister analyses performed by EPA,
 - The accuracy the ambient sample analyses as compared to the ambient canister analyses performed by EPA and,
 - The percent difference of the theoretical exposure chamber concentrations as compared to the TO-15 analytical results (data to be supplied by EPA).
- An appendix with the original round robin laboratory test results including raw and electronic data from each analysis batch,
- An appendix containing the contractor's TO-15 analysis raw results

Task 3 deliverables

A letter report summarizing the results of the round robin laboratory analyses as described for Task 3.

Task 4 Chain of custody plan and purchase of PS tubes and shelters

The Contractor shall develop a chain of custody plan for deployment of tubes during Phase 2. The Contractor shall also provide a cost estimate for purchase of PS tubes and shelters for Phase 2

Task 4 deliverables:

1. Letter report of items listed in Task 4.

Task 5: QAPP

The contractor shall prepare a Category III QAPP covering the environmental data operations in Task 3. Quality Assurance Project Plan (QAPP) shall be prepared following the format in EPA/240/R-02/009, "EPA Guidance for Quality Assurance Project Plans (EPA QA/G-5)" and include any associated SOPs. The contractor shall provide the QAPP in MS-Word for EPA review and approval. No environmental data operations that involve the collection of measurements data for the draft methods shall be started until the QAPP is approved by EPA.

Task 5 Deliverables:

1. QAPP for Task 3

Table 1. Shipping and experimental matrix for passive sorbent laboratory evaluation

Batch	Sample Type	Eastern Research Group (ERG)	Laboratory A	Laboratory B	Laboratory C
1	Lab Blank (Zero)	Supplies Tubes to fixed price laboratories. (EPA conditioned tubes.)	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes
1	Low-range diluted calibration gas sample (~2-5 ppbv Benzene and 1,3-Butadiene)	Ships tubes to fixed price laboratories.	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes
1	Low-range diluted calibration gas sample (~2-5 ppbv; 9 VOCs listed in Task 2 ^a)	Ships tubes to fixed price laboratories.	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes
2	Mid-range diluted calibration gas sample (~20-25ppbv Benzene and 1,3-Butadiene)	Ships tubes to fixed price laboratories.	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes
2	Mid-range diluted calibration gas sample (~20-25ppbv; 9 VOCs listed in Task 2 ^a)	Ships tubes to fixed price laboratories.	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes	Analysis of 3 Sorbent Tubes
3	Ambient (EPA field collection)	Ships tubes to fixed price laboratories.	Analysis of 3 Sorbent Tubes + 1 Field Blank	Analysis of 3 Sorbent Tubes + 1 Field Blank	Analysis of 3 Sorbent Tubes + 1 Field Blank

^a 1,3-Butadiene, Benzene, Toluene, Ethylbenzene, m-Xylene, p-Xylene, Styrene, o-Xylene, and Carbon Tetrachloride

VI. SCHEDULE OF DELIVERABLES

Task	Activity	Date	Comments
1	Work Plan Provide Monthly Progress Reports	20 days after effective date of WA By the 15 th of the following month	NA
2	Letter report summarizing available labs for passive sorbent tube analysis as described for Task 2.	2 weeks after completion of work plan	
3	Letter report and appendices summarizing the results of the round robin laboratory analyses as required for Task 3.	3 weeks after receipt of final analyses from round robin laboratories.	
4	Letter report summarizing chain of custody plan and PS tube/shelter costs as described for Task 4.	4 weeks after completion of work plan	
5	Draft QAPP for EPA Review	1 month after completion of work plan	

VII. REPORTING REQUIREMENTS

The Contractor shall provide monthly progress reports in accordance with the terms of the contract. The Contractor shall submit work products in electronic as well as hard copy form. In addition, the Contractor shall deliver to the WAM each draft and final report in electronic format that is readable by windows-based word-processing (Microsoft Word 2007), graphics (Microsoft PowerPoint 2007), spreadsheet (Excel 2007), and database (Access 2007) programs. The Contractor shall also provide electronic copies of reports in PDF format.